

ABSTRACT

A film deposition apparatus (2) forms a PZT film at a high deposition rate under a low temperature by using a single showerhead (50) throughout the deposition process. Process gases including a raw material gas and an oxidant gas are introduced into a process chamber (4) in which a wafer (W) is accommodated. The process chamber (4) is maintained at a predetermined vacuum during the film depositing process. A gas injection surface (57) of the shower head (50) from which the process gases are injected is divided into an inner zone (84) covering a center portion of the wafer (W) and an outer zone (86) surrounding the inner zone (84). The raw material gas is separately injected from the inner zone (84) and the outer zone (86), and the oxidant gas is separately injected from the inner zone (84) and the outer zone (86).